Re: West Lake Landfill: Draft gamma-scanning QAPP for review

CharlesA Hooper to: Dan Gravatt 07/13/2012 03:33 PM

Dan,

Here are some things to consider, and I've got the track changes on to see the changes I had to the QAPP:

Looks like you've got a good number of background wells- good. But I see there's no groundwater sampling?

Also,
On the surface scan you might add traversing one way at a certain distance along parallel lines, and then traverse at a 90 degree angle to that so you get a more complete scan. There's also probably areas that someone will have to walk amongst thick brush,etc. In those areas you might not get a good gps read, but that's to be expected in the brush.

Consider sending the QAPP to Gregg Dempsey (ORIA-Las Vegas) and Stuart Walker before its final, it might be a good idea to touch base with them before the field work. Gregg may even have some staff that can participate. There cost is usually only travel.

Is there going to be a water level measurement? I'm not sure if the water level will impact the count rate, it shouldn't, but I just don't know.

Are there any known or anticipated contaminants in these wells of a chemical or toxic nature from the old landfill that would warrant using any additional ppe or decon methods? E.g., is there a need to check PID readings at wells, etc?

I've noted on page 7 to take a 6-sec counts for each 1-foot measurement. That way the measurement is 1/10th of a 1-min count. Just something to consider, it might be easier to do that instead of waiting for a number on the meter to stop jumping around.

Hope this is helpful,
-Chuck

West Lake Gamma Scan QAPP_CH.doc

Chuck Hooper
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Dan Gravatt Diane, Chuck, DeAndre, Attached is a draft QA... 07/11/2012 03:33:10 PM

From:	Dan Gravatt/R7/USEPA/US
To:	Dianee Harris/R7/USEPA/US@EPA, CharlesA Hooper/R7/USEPA/US@EPA, DeAndre Singletary/SUPR/R7/USEPA/US@EPA
Date:	07/11/2012 03:33 PM
Subject:	West Lake Landfill: Draft gamma-scanning QAPP for review

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Superfund
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Diane, Chuck, DeAndre,

Attached is a draft QAPP to cover the upcoming in-house gamma scanning fieldwork at West Lake. Please review and comment.

Sincerely,
Daniel R. Gravatt, PG
US EPA Region 7 SUPR / MOKS
901 North 5th Street, Kansas City, KS 66101
Phone (913) 551-7324 Fax (913) 551-7063

Principles and integrity are expensive, but they are among the very few things worth having.

[attachment "West Lake Gamma Scan QAPP.doc" deleted by CharlesA Hooper/R7/USEPA/US]

A1 - Title and Approval
Quality Assurance Project Plan
Surface Gamma Scans and Down-hole Gamma Logs

West Lake Landfill OU1
Bridgeton, Missouri

July, 2012

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Diane Harris — Date:
Quality Assurance Manager

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DeAndre Singletary, Chief — Date:
MOKS Branch
SUPR Division, EPA Region 7

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Dan Gravatt, RPM — Date:
MOKS Branch
SUPR Division, EPA Region 7

A2 - Table of Contents

A. Project Management

A3. Distribution List

This quality assurance project plan (QAPP) is prepared for the West Lake Landfill site in Bridgeton, Missouri, and is submitted as documentation of the protocols and procedures to be followed during collection of surface and down-hole gamma scans at the site. Distribution of this plan will be as follows:

Dan Gravatt, RPM, MOKS/SUPR, U.S. EPA Region 7
Diane Harris, RQAM/ENSV, U.S. EPA Region 7

A4. Project/Task Organization

This project is being managed and administered by EPA Region 7 according to the responsibilities described below:

Dan Gravatt, RPM
Project Manager
MOKS Branch/SUPR Division (913) 551-7324
Responsibilities: Project Management; Field Team Leader; Field Data Collection Project Design and Implementation

OSCs (to be determined)
ERNB and/or ERSB branches
Responsibilities: Field data collection

A5. Problem Definition/Background

The purpose of this QAPP is to support the collection of surface and down-hole gamma scans. The objective of this work is to collect additional data on the distribution of radionuclides within Operable Unit 1 (OU1).

Surface gamma scans and down-hole gamma scans of boreholes were conducted as part of the Remedial Investigation (RI) for the site in the late 1990s, and the data was summarized in the RI Report (EMSI, April 2000). Work under this QAPP will re-scan the surfaces of both areas of OU1 for gamma emissions, as well as scanning all accessible monitoring wells at the site for gamma emissions. Some of the monitoring wells were previously scanned (as boreholes, prior to their completion as wells) during the RI, and some have never been scanned.

Gamma scanning field work will be performed by the RPM and OSCs using field-portable scanning instruments. No samples of any media will be collected.

A6. Project/Task Description

The objective of this study is to collect additional data on the distribution of radionuclides within OU1. This QAPP addresses field procedures to collect the surface and down-hole gamma scan data. The measurement and data acquisition methods specified below have been selected to meet this objective. Figure 1 illustrates the site layout and monitoring well locations for down-hole scans.

The data from this study will be assembled and provided to Dan Gravatt, RPM, MOKS/SUPR Division, U.S. EPA Region 7.

A6.1 Work to be performed

The scope of field activities to be performed for these gamma scans includes the following:

- Scanning the surface of OU1 with a Ludlum Model 2241-3 and NaI Tl detector; and

- Scanning all accessible and intact monitoring wells associated with OU1 and OU2 with a Ludlum Model 2241-3 and Ludlum 44-62 NaI probe to the maximum depth of the well or 150 feet, whichever is lessgreater.

(1) Measurements

(a) Areas and monitoring wells to be sampled

All accessible portions of the surface of OU1 will be scanned with the Ludlum Model 2241-3 and its NaI Tl detector. It is anticipated that vegetation or rubble piles may prevent scanning of portions of Area 2 of OU1. All accessible and intact monitoring wells on-site capable of passing the Ludlum 44-62 NaI down-hole probe will be scanned.

(b) Analyses

Both the Ludlum Model 2241-3 with NaI Tl detector and the Ludlum 2241-3 with 44-62 NaI probe will collect real-time data on gamma intensity. No laboratory samples will be collected or analyzed.

(2) Standards/Criteria

As gamma scanning is a semi-quantitative data collection technique that does not yield specific concentrations of any radioisotopes in environmental media, there are no applicable thresholds or criteria for determining whether a particular gamma count value is acceptable or unacceptable. This data will be used to qualitatively update EPA's knowledge of the distribution of radionuclides at the site.

(3) Personnel/Equipment Requirements

All personnel performing activities covered by this QAPP shall comply with the Occupational Safety and Health Act, as well as EPA regulations for worker health and safety. Personnel requirements are discussed in Section A8. Level D PPE consisting of steel-toed boots, appropriate gloves, long pants and long-sleeved shirt at a minimum will be required for field personnel. Additional PPE for operating EPA's utility terrain vehicles will include full-face helmets and eye protection.

(4) Assessment Techniques

Field instrumentation will be calibrated and demonstrated to be working properly as described in B.7 below.

(5) Project Schedule

The anticipated schedule for this sampling effort will consist of one field scanning mobilization in August, 2012. The field work is anticipated to take one week.

(6) Documentation

Data collection activities will be documented with the following (more detailed descriptions of the documentation is provided in Sections A9, B10, and C2 of this QAPP):

Field records;
Data Summary tables; and
Data Summary figures.

A7. Quality Objectives and Criteria for Measurement Data

The purpose of this investigation is to obtain additional gamma scans of the surface and down-hole gamma logs of accessible monitoring wells. No samples of any media will be collected. As gamma scanning is a semi-quantitative data collection technique that does not yield specific concentrations of any radioisotopes in environmental media, the following quality objectives are generally in a narrative form.

Representativeness will be addressed by proper calibration and use of the gamma scan probes for the surface and down-hole measurements, so that the instrument readings correlate to the distribution of gamma-emitting radionuclides at the site.

Comparability expresses the confidence with which one set of analytical data may be compared with another. Comparability will be qualitatively addressed by comparing the results of the surface gamma scan with the results of the previous RI surface gamma scan; however, due to differences in the methodologies used, differences in the two scan results will not necessarily indicate any change in conditions at the site.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Field completeness is a measure of the amount of valid measurements obtained from the measurement taken in the project. The field completeness objective for this project will be 80%. 100% completeness is not required for the data to be useable for its intended purpose.

Accuracy and precision will be addressed by proper calibration and use of the gamma scan probes for the surface and down-hole measurements, so that the instrument readings accurately measure gamma emission rates at the site.

A8. Special Training Requirements/Certification

All personnel who will be on-site performing field activities associated with this investigation must have successfully completed an initial 40-hour hazardous waste operations training course and, thereafter, an annual 8-hour refresher course. The training must comply with Occupational Safety and Health Administration (OSHA) regulations found in 29 Code of Federal Regulations (CFR) 1910.120(e). Personnel must also have had advanced radiation safety training, and will be required to wear a thermoluminescent dosimeter and electronic personal dosimeter while on-site. Personnel must be trained and certified to operate EPA's utility terrain vehicles, which will be used for the surface gamma scan.

A9. Documentation and Records

The project manager will be responsible for ensuring the most current version of the QAPP is available and distributed to all involved parties, and that data collected during this field work is properly stored and reported to stakeholders.

B. Measurement/Data Acquisition

B1. Sampling Process Design

The surface gamma scan will be conducted with a Ludlum Model 2241-3, with a 3- by 3-inch NaI Tl scintillator probe. The scan will be conducted in a serpentine pattern across each area of OU1, with ~~a~~ spacing between scan lines of 30 feet. Less spacing is appropriate in elevated areas in order to provide detail along contour lines (the RI QAPP specified a 30' grid). The detector will be held approximately twelve inches above the ground surface while the surveyor moves the detector at a constant speed approximating walking pace, and the system will collect a reading every two seconds. Global Positioning System (GPS) data will be simultaneously collected, and the resulting gamma results will be mapped. Prior to scanning the site, background gamma levels will be established at a nearby uncontaminated area (the RI QAPP specified "Local background will be established by taking a measurement off-site on the open field east of the site and east of the St. Charles Rock Road entrance to the site").

The down-hole gamma scan will be conducted with a Ludlum Model 2241-3, with a 44-62 detector. The detector will be lowered to the bottom of each accessible well or to a maximum depth of 150 feet, whichever is less~~greater~~. The detector will then be raised in one-foot

increments, and measurements will be recorded at each interval using the scaler set for a 6-second countas soon as the reading on the instrument appears stable.

Wells PZ-103SS, PZ-104SS, PZ-105SS, PZ-108SS, PZ-111SD and PZ-116SS are designated as background wells to represent naturally-occurring gamma emissions in the subsurface geologic materials. These wells were selected for their depth (150 feet or more), their distance from the OU1 cells, and their lack of any historical detections of radionuclides in groundwater above applicable standards.

B2. Sampling Methods Requirements

Standard operating procedures for the gamma scanning instrument and detectors will be followed. These SOPs are included in Appendix A.

The utility terrain vehicle will be driven at a speed appropriate to generate a thorough density of data points and to prevent the generation of dust.

The EPA field team leader will determine the need for any change in sampling method or locations, if field personnel note difficult site conditions. Any corrective actions required during the implementation of field sampling activities will be documented by the field team leader.

B3. Description of Decontamination Procedures for Sampling Equipment

The down-hole gamma probe shall be decontaminated prior to logging the first well and between each well by washing with a soap solution (such as Alconox) and rinsing with potable water. The rinse water will be poured onto the ground away from the well after use.

The surface gamma scan instrument does not contact the land surface and does not require decontamination.

The utility terrain vehicles, field personnel boots, and any other equipment potentially contaminated by soil will be decontaminated by dry brushing to remove the material. Equipment will then be scanned with a Ludlum Model 44-9 Geiger-Muller "pancake probe" to ensure that any radioactive contamination has been removed down to a level of three times the background count rate with the pancake probe.

Any solid investigation-derived waste such as gloves or paper towels will be bagged and surveyed prior to disposal disposed of at the solid waste transfer facility on-site.

B4. Sample Handling and Custody Requirements

No samples of any media will be collected during this work.

B5. Analytical Methods Requirements

No analytical methods will be used for this work.

B6. Quality Control Requirements

Quality control will be maintained during the field work by operating the instruments in accordance with the manufacturer's instructions and EPA's SOPs.

B7. Instrument/Equipment Testing, Inspection, and Maintenance Requirements

The field equipment testing, inspection, and maintenance will be performed in accordance with the manufacturer's recommendations.

B8. Instrument Calibration and Frequency

Field equipment calibrations will be performed in accordance with the manufacturer's recommendations prior to mobilization and as needed while on-site.

B9. Inspection/Acceptance Requirements for Supplies and Consumables

No supplies or consumables will be required for this work.

B10. Data Acquisition Requirements

Data acquired from the surface gamma scan instrument and its GPS tracker will be downloaded to EPA computer systems and mapped as necessary to support program goals. Data from the down-hole gamma scanner will be recorded by hand in field logbooks and transcribed into an EPA computer system, or entered directly into an EPA laptop in the field in real time.

B11. Data Management

Data will be stored and backed up on EPA computer systems, filed in the Records Center, and distributed to stakeholders as needed.

C. Assessment/Oversight

C1. Assessments and Response Actions

The EPA QA manager or their designee may conduct an audit of the field activities for this project if requested by the EPA project manager. The EPA QA manager will have the authority to issue a stop work order upon finding a significant condition that would adversely affect the quality and usability of the data. The EPA project manger will have the responsibility for initiating and implementing response actions associated with findings identified during the on-site audit. Once the response actions have been implemented, the EPA QA manger will perform a follow-up audit to verify and document that the response actions were implemented effectively.

C2. Reports to Management

A report of the field work and analytical results will be prepared by the project manager and copies shared with the state and other stakeholders. This report will also include information on any performance evaluations, audits, and significant QA problems, as applicable.

D. Data Validation and Usability

D1. Data Review, Validation, and Verification Requirements

The EPA Project manager will be responsible for overall validation and final approval of the data in accordance with project purpose and use of the data.

D2. Validation and Verification Methods

As the data collected by the planned field work is semi-quantitative, no additional data validation or verification methods are planned.

D3. Reconciliation with User Requirements

Once the data results are compiled, the EPA project manager will review the data results to determine if they fall within the acceptance limits as defined in this QAPP. Completeness will be evaluated to determine if the completeness goal for this project has been met. If the completeness objective has not been met, the EPA project manager will determine an appropriate course of action. Failure to meet the completeness objective will not necessarily require re-sampling.

Upon compilation of the data, the RPM will review the data in relation to the quality objectives and criteria for measurement, to identify any limitations on the use of the data. The RPM will evaluate data to ensure the information sufficiently characterizes the distribution of gamma-emitting radionuclides at the site, and assess the degree to which the Quality Objectives in A.7 and the Quality Control measures in B.6 have been met. If the RPM determines data quality indicators do not meet the project requirements, then the data may have to be discarded and re-sampling may be required.

Abbreviations and Acronyms

CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
GPS	Global Positioning System
OSC	On-scene commander
OSHA	Occupational Safety and Health Administration
OU	operable unit
PPE	personal protective equipment
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RI	remedial investigation
RPM	Remedial project manager
RQAM	regional quality assurance manager
SOP	standard operating procedure
SOW	statement of work